IS 8258 (1976): Oxydemeton-Methyl Technical Concentrate
[FAD 1: Pesticides and Pesticides Residue Analysis]

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IS : 8258 - 1976

Indian Standard

SPECIFICATION FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATE

(First Reprint JULY 1990)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3 *February* 1977

Indian Standard

SPECIFICATION FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATE

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AMENDMENT NO. 1 FEBRUARY 1988

TO

IS : 8258 - 1976 SPECIFICATION FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATE

(*Page* 4, *Table* 1) — Substitute the following for the existing table:

TABLE 1 REQUIREMENTS FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATES

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Appendix of This Standard	Cl No. of IS : 6910-1982*
(1)	(2)	(3)	(4)	(5)
i)	Oxydemeton-methyl content, percent by mass, *Min*	50·0	A	—
ii)	Water content, percent by mass, *Max*	1·0	—	4.1
iii)	Acidity (as H_2SO_4), percent by mass, *Max*	1·5	—	11.3.2
	or			
	Alkalinity (as NaOH), percent by mass, *Max*	0·05	—	11.3.3

*Methods of test for pesticides and their formulations (*first revision*).

(*Page* 4, *clause* **3.1**) — Substitute the following for the existing clause:

'**3.1 Packing** — The material shall be packed as per requirements given in IS : 8190 (Part 2)-1980*.'

(*Page* 4, *foot-note with* '*' *mark*) — Substitute the following for the existing foot-note:

'*Requirements for packing of pesticides. Part 2 Liquid pesticides (*first revision*)'

[*Page* 5, *clause* **3.2**(g)] — Substitute the following for the existing matter:

'g) The minimum cautionary notice as worded in the *Insecticides Act and Rules*'

(*Page* 5, *clause* **4.1**, *with note*) — Substitute the following for the existing clause:

'**4.1** Representative samples of the material shall be drawn as prescribed in IS : 10946-1984 'Methods of sampling for technical grade pesticides '

(*Page* 5, *clause* **5.2**, *line* 2) — Substitute '*see* IS : 1070-1977* ' *for* '*see* IS : 1070-1960* '.

(*Page* 5, *foot-note with* '*' *mark*) — Substitute the following for the existing footnote:

'Specification for water for general laboratory use (*second revision*).'

(*Pages* 6 and 7, *Appendix* A) — Substitute the following for the existing Appendix:

'APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF OXYDEMETON-METHYL CONTENT

A-0. PRINCIPLE

A-0.1 Oxydemeton-methyl is hydrolysed by alkali. After hydrolysis known volume of hydrochloric acid is added and the excess hydrochloric acid is back titrated with standard alkali Free acidity is found out by direct titration with standard alkali. The difference between total hydrolysis and acidity value is equivalent to oxydemeton-methyl.

A-1. APPARATUS

A-1.1 Conical Flask — 500-ml capacity with standard joint stopper.

A-1.2 Magnetic Stirrer

A-2. REAGENTS

A-2.1 Standard Sodium Hydroxide Solution — 0·1 N.

A-2.2 Hydrochloric Acid Solution — 0·1 N approximately.

A-2.3 Bromocresol Green — 0 1 percent (*m/v*) solution in ethanol.

A-3. PROCEDURE

A-3.1 Total Acidity by Hydrolysis — Weigh accurately the sample equivalent to about 0 40 to 0 45 g of the active ingredient into 500-ml conical flask by difference method. To it add 50-ml 0-1N sodium hydroxide solution Stopper the flask and stir the contents using a magnetic stirrer for 30 minutes at room temperature. Wash the sides of the flask with water.

A-3.1.1 Titrate 50-ml of standard 0·1N sodium hydroxide solution with 0·1N hydrochloric acid solution using bromocresol green as indicator. Let the volume of hydrochloric acid solution required by V_0 ml.

A-3.1.2 Add V_0 ml of hydrochloric acid solution to the hydrolysed solution. Mix the contents by swirling and wash the sides of the flask by 100-ml acetone. Back titrate the excess acid with 0·1N standard sodium hydroxide solution using bromocresol green indicator. The end point is from yellow to bluish green to blue. There shall not be any greenish shade. *p*H of the final solution will be 5. Let the reading be V ml.

A-3.2 Determination of Free Acidity — Weigh accurately about 5·0 g of the sample into a 250-ml conical flask. To it add 10-ml water and 50-ml acetone. Titrate with 0·2N sodium hydroxide solution using bromocresol green as indicator. Let this titer reading be V_1 ml.

A-4.1 CALCULATION

A-4.1 Oxydemeton-methyl content, percent by mass

$$= \frac{\left[\frac{V}{M} - \frac{V_1}{M_1}\right] \times N \times 246 \times 100}{1\,000}$$

$$= \left(\frac{V}{M} - \frac{V_1}{M_1}\right) \times N \times 24\,6$$

where

M = mass, in g, of the sample taken for total acidity determination,

M_1 = mass, in g, of the sample taken for free acidity determination, and

N = normality of sodium hydroxide solution.

NOTE — Addition of acetone should not change the titer reading by more than 0·05 ml. Addition of acetone is required to break the emulsion. Hence, its addition is not required when analysing technical concentrate samples.'

(AFCDC 6)

AMENDMENT NO. 2 FEBRUARY 1989
TO
IS : 8258 - 1976 SPECIFICATION FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATE

[*Page* 6, *clause* **A-3.1.1** (*see also* Amendment No 1)] — Substitute the following for the existing second sentence

'Let the volume of hydrochloric acid solution required be V_0 ml.'

[*Page* 6, *clause* **A-3.2**, *line* 3 (*see also* Amendment No. 1)] — Substitute '0 1 N' *for* '0 2 N'

(AFCDC 6)

Reprography Unit BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATE

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 November 1976, after the draft finalized by the Pest Control Sectional Committee had been approved by the Agricultural and Food Products Division Council and Chemical Division Council.

0.2 Oxydemeton-methyl is a systemic insecticide and acaricide used for controlling sucking pests, such as aphids, jassids, spider mites, and white flies.

0.3 Oxydemeton-methyl is the accepted common name by the International Organization for Standardization for the insecticidal chemical S-[2-(ethyl-sulphinyl)-ethyl] O, O-dimethyl phosphorothioate. It is also known by the name Demeton-o-methyl sulphoxide. The empirical and structural formulae and the molecular mass of oxydemeton-methyl are as indicated below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_6H_{15}O_4PS_2$	$(CH_3O)_2P(=O)S.CH_2.CH_2.SO.C_2H_5$	246·3

0.4 In the preparation of this standard due consideration has been given to the provisions of the Insecticides Act, 1968 and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for oxydemeton-methyl technical concentrate.

*Rules for rounding off numerical values (*revised*).

2. REQUIREMENT

2.1 Description — Oxydemeton-methyl technical concentrates shall be in the form of an amber coloured liquid free from extraneous matter and added modifying agents except solvents.

2.2 The material shall also comply with the requirements specified in Table 1.

TABLE 1 REQUIREMENTS FOR OXYDEMETON-METHYL TECHNICAL CONCENTRATE

St No.	Characteristic	Requirement	Method of Test, Ref to	
			Appendix of this Standard	Cl No. of IS : 6940-1973*
(1)	(2)	(3)	(4)	(5)
i)	Oxydemeton-methyl content, percent by mass	50 to 55	A	—
ii)	Water content, percent by mass, *Max*	1·0	—	4.1
iii)	Acidity (as H_2SO_4), percent by mass, *Max*	1·5	—	11.3.2
iv)	Alkalinity (as NaOH), percent by mass, *Max*	0·05	—	11.3.3

*Methods of tests for pesticides and their formulations.

3. PACKING AND MARKING

3.1 Packing — The material shall be packed in clean and dry containers made of mild steel suitably and properly lacquered from inside. The containers shall also conform to the various general requirements stipulated in 2 of IS : 8190 (Part II)-1976*, as applicable.

3.2 Marking — The containers shall bear legibly and indelibly the following information in addition to the provisions required under the Insecticides Act and Rules:

a) Name of the material;

b) Name of the manufacturer;

c) Date of manufacture;

d) Batch number;

e) Net volume of contents;

*Specification for packing of pesticides : Part II Liquid pesticides.

f) Active ingredient contents, percent (m/m); and

g) The minimum cautionary notice worded as under:

'AVOID CONTAMINATION OF FOODSTUFFS AND ANIMAL FEEDS, AND INHALATION OF DUSTS AND MISTS MADE FROM THIS INSECTICIDE. IF IT COMES IN CONTACT WITH SKIN, WASH WITH SOAP AND WATER. DO NOT USE THIS CONTAINER FOR ANY OTHER PURPOSE EXCEPT FOR STORAGE OF PESTICIDES. IN CASE OF POISONING CALL A PHYSICIAN. ANTIDOTE-ATROPINE SUPPORTED BY 2-PAM (2-PYRIDINE-2-ALDOXINE-N-METHYLIODIDE).'

3.2.1 The containers may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

4. SAMPLING

4.1 Representative samples of the material shall be drawn as prescribed in 'Indian Standard methods for sampling of pesticides and their formulations (*under preparation*)'.

NOTE — Till such time the standard under preparation is published, the matter shall be as agreed to between the parties concerned.

5. TESTS

5.1 Tests shall be carried out as prescribed in the appropriate methods referred to in col 4 and 5 of Table 1.

5.2 Quality of Reagents — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1960*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

*Specification for water, distilled quality (*revised*).

APPENDIX A

[*Table* 1, *Item* (i)]

DETERMINATION OF OXYDEMETON-METHYL CONTENT

A-0. PRINCIPLE

A-0.1 Oxydemeton-methyl content is determined by saponification of the material with sodium hydroxide, followed by back titration of the excess alkali. A correction is made for free acidity.

A-1. APPARATUS

A-1.1 Conical Flask — 300 ml capacity, fitted with ground-glass cone joint and stopper.

A-1.2 Magnetic Stirrer

A-1.3 Burette — 50 ml capacity.

A-1.4 Pipette — 50 ml capacity.

A-1.5 Conical Flask — 300 ml capacity, wide-mouthed.

A-2. REAGENTS

A-2.1 Standard Sodium Hydroxide Solution — 0·1 N.

A-2.2 Standard Hydrochloric Acid Solution — 0·1 N.

A-2.3 Methyl Red Indicator Solution

A-3. PROCEDURE

A-3.1 Weigh accurately a sufficient amount of sample containing 0·4 to 0·5 g of active ingredient and transfer to the conical flask. Pipette in 50 ml of standard sodium hydroxide solution. Stopper the flask and stir at 27°C for 30 minutes by means of a magnetic stirrer. Titrate the excess sodium hydroxide with standard hydrochloric acid solution.

A-3.2 Weigh accurately 3·0 to 4·0 g of the sample into a 300-ml wide-mouthed conical flask. Add 100 ml of distilled water and few drops of methyl red indicator solution, cool to 10°C and titrate quickly with standard sodium hydroxide solution till the colour changes from red to yellow.

A-4. CALCULATION

A-4.1 Oxydemeton-methyl content, percent by mass $= \left[\frac{V_1}{M_1} - \frac{V_2}{M_2} \right] \times N \times 24{\cdot}6$

where

V_1 = volume in ml of the standard sodium hydroxide solution used in the first titration (**A-3.1**),

M_1 = mass in g of the sample taken for the first titration (**A-3.1**),

V_2 = volume in ml of the standard sodium hydroxide solution used in the second titration (**A-3.2**),

M_2 = mass in g of the sample taken for the second titration (**A-3.2**), and

N = normality of the standard sodium hydroxide solution.

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